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# Co-Operative Network from the Rescue Board Perspective in the Kainuu Snow Disturbance Case, January 2018

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The purpose for this thesis is to describe the co-operative network in the Kainuu snow disturbance case in January 2018 and point out the strengths and developmental needs, which were generated by the co-operative network during the disaster. The essential research questions are the following: What were the benefits generated by in the co-operative network in Kainuu January 2018? What were the observed developmental needs so that the network-based response to the snow disturbance could be improved in future? How can the co-operation be improved from the past to this point?

The thesis is commissioned by the Rescue Department of South Karelia, and it is included in the KAT, Kotona asumisen turvallisuus = 'Safety at Home' project entity commissioned by the Rescue Department of South Karelia and Social and Health Care District of South Karelia. The aim of this thesis is to receive a holistic and comprehensive picture of the co-operative network in the Kainuu snow disturbance case. The information provided by this thesis forms the basis for the more comprehensive understanding on the multilateral structure and synergies by the network for the production of response to the snow disturbance. The improved understanding can be used for the development of more efficient preparedness and responses by the Rescue board and other authorities and contributors to the similar disturbances in future.

The research was conducted as a qualitative research, which included expert interviews with the co-partners, who participated in the disaster management of the Kainuu snow disturbance case. The interviewed co-partners and the interview questions are presented as appendixes of this thesis.

The Kainuu snow disturbance case is an excellent example of co-operative network, in which the competencies of each individual co-partner are integrated into one network-like entity to provide a more efficient response to the disaster and to accelerate the recovery from it. The results of the network-based co-operation were evident: the disaster preparedness and management benefit from the co-operative network. The situational awareness and response produced for the snow disturbance were more comprehensive by the co-operative network than by individual actors, and as a result, the recovery of the society from the snow disturbance was improved. By the developmental needs pointed out by the thesis, it is possible to improve the efficiency of the co-operative network in future.

Keywords: network, disaster management, co-operation, societal resilience

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Tämän opinnäytetyön tavoitteena on kuvailla monitoimijaverkostoa ja sen toimintaa tykkylumen aiheuttaman häiriötilanteen aikana Kainuussa tammikuussa 2018. Tarkoituksena on selvittää sekä monitoimijaverkoston vahvuudet että toisaalta kehitystarpeet, jotka havaittiin häiriötilanteen aikana. Keskeisiä tutkimuskysymyksiä ovat: Mitkä olivat monitoimijaverkoston hyödyt häiriötilanteen aikana? Kuinka monitoimijaverkoston toimintaa voi kehittää, jotta sen vaste häiriötilanteeseen olisi tehokkaampi tulevaisuudessa? Kuinka yhteistyötä voidaan parantaa nykyiseltä tasolta?

Opinnäytetyön on valtuuttanut Etelä-Karjalan Pelastuslaitos, ja se sisältyy Etelä-Karjalan Pelastuslaitoksen ja Eksoten yhteiseen KAT (Kotona Asumisen Turvallisuus) -hankkeeseen. Opinnäytetyön tuottaman tiedon avulla voidaan ymmärtää syvällisemmin häiriötilanteeseen vastetta tuottaneen monitoimijaverkoston monitahoista rakennetta sekä toimijoiden yhteisvaikutusta. Monitoimijaverkoston toiminnan ymmärtäminen auttaa Pelastustoimea, muita viranomaisia ja kehittäjiä varautumaan entistä paremmin vastaaviin häiriötilanteisiin sekä kehittämään vastetta tarkoituksenmukaisemmaksi.

Tutkimus toteutettiin laadullisena tutkimuksena, ja se sisälsi asiantuntijahaastatteluita useiden toimijoiden kanssa, jotka toimivat tykkylumen aiheuttaman häiriötilanteen vakauttamiseksi. Haastatellut toimijat sekä haastattelukysymykset on esitelty opinnäytetyön liiteosiossa.

Kainuun tykkylumen aiheuttama häiriötilanne on erinomainen esimerkki monitoimijaverkostosta, jossa yksittäisten toimijoiden vahvuudet muodostavat verkostotyyppisen kokonaisuuden. Verkosto tuottaa entistä tehokkaampaa vastetta häiriötilanteeseen sekä nopeuttaa siitä palautumista. Monitoimijaverkoston hyödyt ovat ilmeiset: onnettomuuteen voidaan varautua perusteellisemmin ja tilanteen hallinta on selkeämpää. Monitoimijaverkoston tuottama tilannekuva ja toiminta häiriötilanteen aikana oli kattavampaa kuin mitä ne olisivat olleet yksittäisen toimijan tekemänä. Lisäksi tilanteen normalisoituminen nopeutui monitoimijaverkoston ansiosta. Opinnäytetyön selventämät kehitystarpeet osoittavat, että monitoimijaverkoston tehokkuutta voidaan edelleen kehittää tulevaisuudessa.

Avainsanat: toimijaverkosto, onnettomuudenhallinta, yhteistyö, yhteiskunnallinen resilienssi

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## 1 Introduction

The rapid change of the operational environment enhances the need for more efficient and holistic co-operation between the official authorities, companies, educational institutions, third sector and other relevant contributors in the society. Due to the characteristics and challenges of the operational environment, the contribution and efforts of one individual co-partner are not adequate enough to cover all the potential issues efficiently. The increasing and multilevel interdependence of factors of operational environment make the preparedness more challenging. Continuingly decreasing resources also encourage to improve the protocols by the more comprehensive networking (Tiimonen & Nikander, 2016).

Complexity of the operational environment is increasing. This enhances the need of the information and competencies produced by multi-author networks. Holistic and a long-term developmental approach is the key to the best result (Tiimonen & Nikander, 2016). The Rescue Department of South Karelia was integrated to the co-operative networking due to the essential driving forces in the operational environment. Firstly, the population is going to include an increasing segment of elderly citizens at regional and national level, which means more demand on nursing and safety production based on efficient networks of professionals in future. Secondly, due to the constant change of operational environment, the co-operative network needs also be further developed.

Exchange of information and production of situational awareness are improved by the network kind of operation of authors. Therefore, it is essential that the co-operational networks are based on the multifaceted educational background and expertise of authorities. The ability to recognise the varying conditions at different levels, for instance national and local levels, is typical to an effective network-kind of operation and production of services. The key representatives regarding the safety and functionality of the society are Rescue Board, municipalities, public social and health care, educational institutes, research and development institutes, third sector and companies. These all are characterised by specific-kind of competencies and expertise related to state and development of the society.

This thesis is conducted as a part of Safety at Home -developmental concept in South Karelia. The thesis focuses on a higher preparedness level in South Karelian and Kainuu regions against nature disasters, and the core idea is to learn from the past, what occurred in Kainuu during the snow disturbance circumstances in January 2018. The observations are pointed out from the Finnish Rescue Board's perspective. The structure, synergies and the further development of the multiauthor-based network is emphasised. This thesis is divided into three main sections: pre-phase, on-site phase and post-phase regarding the Kainuu snow disturbance case in January 2018.

Kainuu snow disturbance case was selected for the topic of this thesis for the following reasons. The disturbance was current, long-lasting and affected widely on the local society (Figure 1). There was a great public interest towards the event. The event occurred in the environment where the inhabitants' average age was higher compared to the Southern Finland, which thus increased the vulnerability of the local society to the event. The need for multi-level co-operation encourages to learn from this specific event. Additionally, the frequency of natural disasters this kind is increasing. Regarding to this, it is essential to evaluate the value and developmental factors of the co-operative network in Kainuu snow disturbance case.



**Figure 1.** Enormous amount of wet snow stuck on trees and powerlines. Photo: Loiste Oy.

The interviews of the thesis provided confidential information concerning the municipal contingency plans and the logbooks of the co-operative network in the Kainuu snow disturbance case. Although it was not possible to publish this data, it was processed and utilised confidentially during the thesis process.

The frequency of natural disasters is increasing. The natural disasters and heavy rains occur more often during winter, and during summer there can be floods and occasionally drought (European Commission, 2009). According to the interviews of this thesis, wet snow is a type of snow, which sticks on trees and powerlines (Figure 1). When the snow layer thickens into a certain point, the trees and power lines may collapse under the heavy snow weight. There are approximately 8 000 km of vulnerable powerlines in Kainuu, and a great length of it is located within a forest area. This location complicates the repairing acts.

## 1.1 Limitations

Few of the snow disturbance -related organisations were left out of the interviews due to the limited research time.

The snow disturbance case was limited into the Kainuu region, more precisely to the Northern Kainuu, where the disaster occurred in its greatest destructive form.

The independent preparedness was left out from the scope of the thesis. Although it is an essential part of preparing for a natural disaster, this research focuses on the co-operative network and on its members in the Kainuu snow disturbance case.

## 1.2 Research Questions and the Scope of the Research

The academic problem exists in the following questions:

- What were the strengths and synergies provided by the co-operative network in Kainuu snow disturbance January 2018? What kind of benefits were observed?
- What were the major developmental needs? How can the network-based co-operation be further improved in future?

## 2 Theoretical Framework

### 2.1 Preparedness Planning

The operative management and preparedness for a natural disaster have developed during the era of digitalisation. This results practically, that e.g. the Internet, and particularly the social media, is seen as a possibility for the multilevel communication between all actors during the disaster conditions. The social media networking was found useful by the individual actors during a typhoon disaster in Taiwan (Huang, Chan & Hyver, 2010). Secondly, the role of the networking as a disaster management model is emphasised in the crisis and disaster management worldwide. E.g. despite the limited resources of the Indonesian state during the Bantul earthquake 2006, the response and recovery to the disaster were efficiently organised by the power of the co-partners, who collaborated for maintaining and returning the societal resilience (Bevaola, 2012). However, as learnt in the disaster of Fort Worth Tornado in Texas 2000, the full potential of a co-operative network can only be utilised in its most efficiency, if the situational awareness is for each co-partner clear enough and the coordination of the co-operative network is adequate. (McEntire, 2000). And as the German Research Centre for Geosciences GFZ states to the flood disaster in the Southern Germany 2005, the disaster management cannot be limited



to the organisational borders but be rather conducted by a solidary co-operation between the responsible co-partners over as a multi-organisational network (Merz & Didszun, 2005).

Finland has defined its preparedness policy in the Security Strategy for Society 2017. The preparedness is planned to conduct in co-operation with the authorities, companies, NGOs and citizens. The co-operation is deepened, and over-lapping tasks are tried to pretend. The multifaceted methods are widely utilised. (The Security Committee, 2017). Co-operative networking has the benefit to reduce the regional vulnerability. It increases adaptability in the change. This adaptability is more efficient within a network regarding to an individual co-partner.

According to the Report of the Internal Security by the Ministry of the Interior, the success of the internal safety and security requires large-scale co-operation between the Finnish authorities, international collaborators, NGOs, companies and many other collaborators. It cannot be overlooked, that the co-operative perspective is the current policy in the 2010's to conduct both national and regional risk management. Unsurprisingly, co-operative networking has the benefit, that it reduces the regional vulnerability. The adaptability to the change is increased. This adaptability is more efficient within a network than compared to the ability of an individual co-partner.

The Finnish emergency power act 1552/2011 12§, obligates the municipalities to conduct comprehensive preparations before an unstable state of the society (FINLEX, 2011). The core message of the act 1552/2011 is to have the Finnish nation and its regions prepared comprehensively in pre-phase, so that it is capable to protect its people and subsistence, economy, legal order, fundamental rights, human rights and to secure the national sovereignty and independence. This means in practice, that e.g. the specific contingency plans were created by the interviewed municipalities Hyrynsalmi, Puolanka, Ristijärvi and Suomussalmi before the disaster. Additionally, the societal resilience is maintained and improved further by systematic training and collaboration with the co-partners in and next to the municipal regions. The municipal organisations, e.g. the Rescue Department of Kainuu has created a specific service level agreement.

The management diary from the Rescue Department of Kainuu was analysed to understand more comprehensively the whole-chain-process to the snow disturbance case from the Rescue board perspective. These diaries are confidential, but it was able to utilise them a research material for the thesis. The incidents and the required actions are precisely described in these diaries, which helps to understand the scale of actions and the actions types. These actions included also the information of exact dates and time.

## 2.2 Extreme Weather Conditions

The frequency of extreme weather conditions is increasing worldwide. Climate change is associated by an expected increase in weather-related disasters. Winter storms have a higher risk to occur and to cause damage in the Northern Finland (European Environment Agency 2008, p.19). Unexpected and unique natural disasters, as it could have perceived in Kainuu in January 2018, occur with a higher frequency. Climate change changes the rain quantity, and it changes the forms of rain (European Commission, 2009).

## 2.3 Emergency Services in Finland

The Rescue Board's strategy to the year 2025 confirms the network perspective: The Rescue Departments are not acting individually anymore, but they are more in the coordinator's role by organising and supporting each co-partner within the co-operative network. The strategy emphasises the prevention of the accidents and disasters already in the pre-phase. The risk management and preparedness are both in the key role for minimising the accidents. According to the strategy, the response to a disturbance case is not comprehensive enough, when it is conducted only by one individual organisation. Therefore, it must be conducted in co-operation with all potential collaborators for the more comprehensive production of resilience for the society (The Ministry of the Interior, 2016).

The Finnish government's directive obligates the regional rescue department to formulate a service level agreement. Kainuu has been described in the Service level agreement of Kainuu Rescue Department (further mentioned as the agreement) as a region with an increasing segment of senior population. According to the dependency ratio presented by Statistics Finland, the population in the countryside is generally decreasing (The Official Statistics Finland, 2017). The number of inhabitants is decreasing, and the habitation is centralising to the centres of growth. These changes are provided by new challenges to the operational environment of Rescue Department of Kainuu. An increasing share of both proactive and operative actions is emphasised to conduct through co-operative network in Kainuu. This is confirmed by the Finnish rescue act 379/2011 42§. (The Rescue Department of Kainuu, 2015)

## 2.4 Definitions

**Co-operative network** describes the comprehensive co-partner entity in the Kainuu snow disturbance case.

**Regional crisis group** led by the Rescue Department of Kainuu. The regional crisis group gathered once a day in the fire station of Kajaani and consisted of the Rescue Department of Kainuu, The Energy Company Loiste, Siirtoverkko Kaisanet, the Kainuu Social and Health Care, the Social work of Kainuu, the Kainuu Environment Bureau, Kainuu emergency medical service, the Police Department of Oulu and the Kainuu municipalities.

**Crisis management team** is an operational group within a municipality, which consists of the head managers of each municipal division. The crisis management team is designated before a crisis, and it has a systematic training for the preparedness and operational management of disturbances.

**Societal resilience** means the national and regional ability to deal with a crisis and recover efficiently from it.

**VIRVE** is a telecommunication network utilised by the Finnish authorities. VIRVE is a unique tool for situational management and co-operation. It has shown its capability to be a trustworthy network in circumstances, in which the regular GSM and Internet connections would not function.

**Co-partners** mean the collaborators, who participated in the disaster management of the co-operative network.

**‘Kotivara’ model by the Martha Organisation** is basically the guidelines for reserving useful and necessary items at home for a disturbance case, in which the regular supply of materials between the inhabitants and the communities is interrupted. The guidelines are aimed for the enhanced preparedness during disturbances, in which both material support and civil skills are required.

**Village club building** is a building usually in the centre of a village, where the common activities, e.g. social get-together-events and other activities are organised for the inhabitants within the village.

### 3 Research Methodology

The Kainuu snow disturbance case occurred around the New Year Eve 2017, which is the core winter season with extreme short day-light time in Finland. The disturbance lasted until the 26 January 2018. Although the cautionary weather forecasts raised the preparedness level in Kainuu region, the duration and extent of the disturbance were still a certain surprise for a few of organisations. The weather was snowy, and on the other hand the temperature was just a bit below zero. Therefore, the ground was not frozen, so there were soft and muddy in many places during the rebuilding work of the broken power lines. On the other hand, the mild temperature eased the local people to maintain their houses warm.

The wet snow caused high pressure on the trees next to the powerlines. The uppermost parts of the trees bent and fell on the powerlines, which damaged the powerlines and instantly caused the power outages (Figure 2). This resulted plenty of electric power outages in the Kainuu region.



**Figure 2.** The trees collapsed on the powerlines, when they could not bear the weight anymore. This effect caused the power outages. Note the dark winter season. Photo: Loiste Oy.

The power outages lasted from few hours to five days. Approximately 20% of the inhabitants were affected by the power outages. The disturbance was challenging because the effects of power outages were multifaceted: e.g. production of food and heating of houses were difficult to commit. The Kainuu snow disturbance case was characterised by a large-scale effects and long duration. As a consequence, the power outage was described in the contingency plan of the municipality of Puolanka as one of the severest crises in the peace time. Water supply failures, the everyday life without electricity and the disturbance in the telecommunications were the most essential problems. Some villages in the countryside were without electricity from four to five days. This basically meant the households were without electricity and were thus unable to use all electricity-dependent devices including heaters, mobile phones and refrigeration. The Rescue Department of Kainuu had a higher rescue operation frequency compared to the normal circumstances in Kainuu. The snow disturbance affected the entire Kainuu region, but particularly its northern municipalities: Hyrynsalmi, Kuhmo, Puolanka, Ristijärvi and Suomussalmi.

Twelve organisations from the Kainuu were interviewed between March and May 2018. The aim of the interviews was to produce a more comprehensive understanding of the snow disturbance-related responses and developmental needs by the co-operative network. The interviewed organisations had the best experience-based expertise concerning the preparedness and production of response to the snow disturbance. Especially, the co-operation between the network

partners and the synergies and developmental needs were emphasized during the interviews. The list of interviewees is attached as an appendix of the thesis.

### 3.1 Semi-Structured Interviewing

Semi-structured interviewing is a type of research interview, where the questions are the same to all of the interviewees. The interview follows a systematized structure. According to Gillham, the interviews should last approximately an equivalent time. The questions are not totally structured, and the interviewees have thus the possibility to describe the evaluated issue more freely, based on their own words. Interviewees can be prompted with supplementary questions for more multifaceted answer. (Gillham 2005, p.70)

Semi-structural interview was conducted for collecting data from the Kainuu snow disturbance case. The main objective of this empirical method was to receive the precise and comprehensive experience of the local actors about the co-operative network which operated in the Kainuu snow disturbance case. The questionnaire can be found as an appendix of the thesis.

### 3.2 Implementation of the Research Interviews

The thesis was conducted as a qualitative research through an empirical, semi-structural interviewing. Both Skype and mobile phoning were utilised for interviewing due to the long distance between the interviewer and the interviewees in practice. The expert interviews were committed between March and May 2018. The questionnaire was sent some days before the interview itself in order to support the interviewee to prepare himself for answering. Each interview lasted approximately 60 minutes. The interviews were recorded by a recorder device and notes were made parallel to interviewing. The interview recordings were found to be useful, because the interviews could be re-listened for more exact analysing. After the interview, a memo was created and sent to the interviewee for assessment of correctness of the produced content of the memo. The content of the corrected memos was then analysed. The memos were stored carefully, so that outsiders did not have access to them.

### 3.3 Research License

The research license was agreed with all the collaborators in the beginning of the thesis process. It was the most essential document for justifying to interview the experts and implementing them. The research license is attached as an appendix of the thesis.

### 3.4 Qualitative Data Analysis

The great amount of raw data must be researched carefully, so that the most essential factors are found (Gillham, p.129). The inductive content analysis is one applicable method for this kind of purposes. The inductive content analysis is a type of analysis, which categorises the key

words and concepts from the data entity. The inductive content analysis was utilised to categorise the content and to find the common key features, which appeared during the Kainuu snow disturbance case. Indeed, this analysis method was conducted to find the essential answers from the wide data from the Skype and call interviews.

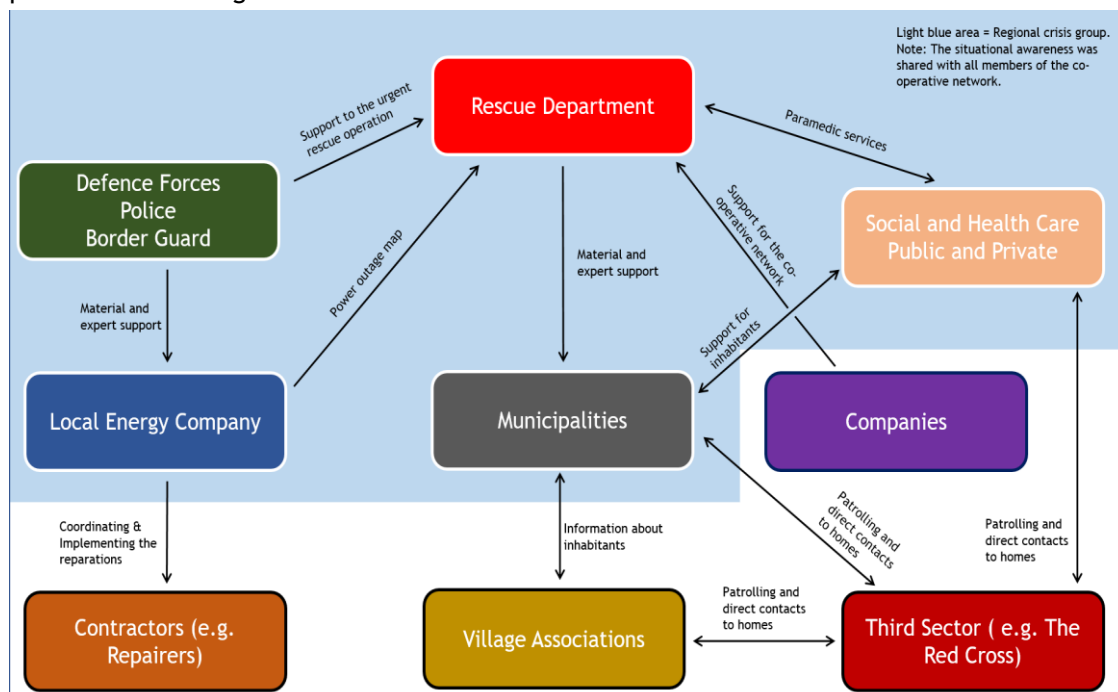
According to Matthew B. Miles and A. Michael Huberman (p.6-7), most of the analysis should be conducted through data presented as a qualitative (word) form. The interviews were implemented so, that the data from the interviews was as a qualitative (written) form. Additionally, the interviews followed the systematised structure, which made the comparisons between individual interviews possible. Lastly, the content of the interviews was corrected and confirmed by the assessment of memos by the interviewees.

## 4 Results

The results were formed basing on the twelve expert interviews (Appendix 1). The results are categorised into the roles of the organisations, separate results in the pre-, on-site and pro-phase, and lastly, the study visit on the 27<sup>th</sup> of April is described.

### 4.1 The Role of Organisations During the Kainuu Snow Disturbance Case

The general structure of the co-operative network during the Kainuu snow disturbance event is presented in the figure 3.



**Figure 3:** The structure of the co-operative network during the Kainuu snow disturbance event, the relations between the co-partners and the main shared assets.

**The Rescue Department of Kainuu** was playing the key role in the entire disaster management. Its main objective was to conduct the responsibility to lead, which practically meant coordinating the disaster management in the regional crisis group, gathering the situational awareness and sharing it with the co-partners. The Rescue Department provided both material and expert help to the co-partners. Comprehensive planning through decades was also conducted by the Rescue Department. During the snow disturbance, the Rescue Department had a higher frequency of rescue operations than it would normally have. Despite the increase of operational events, the operations were completed by their own resources with a minor help from the neighbouring Rescue Departments.

The co-partners felt, that the main leading responsibility of the Rescue Department improved the situational awareness and clarified the overall response during the snow disturbance. The Kainuu snow disturbance case and its co-operative network were analysed and developed in the post-analysis meetings organised by the Rescue Department, and the members of the regional crisis group participated them. Also the inhabitants of Kainuu were satisfied with the Rescue Department's actions according to the SPEK questionnaire. (Laurikainen, 2018)

**The Municipalities of Hyrynsalmi, Puolanka, Ristijärvi and Suomussalmi** coordinated the disaster management independently in their own regions, maintained the situational awareness of the municipal level and organised the practical responsive actions on the inhabitants' level (Ahonen, 2018). The municipalities were links between the regional crisis group and the NGO's, e.g. the village associations. Co-operation between other municipalities was planned in the pre-phase, and possible coming evacuations and other missions were planned to organise co-operatively (Keränen, 2018).

The municipalities offered temporal evasive accommodation, water supply and facilities for bathing and recharging the smartphones for their inhabitants. Despite the large-scale effects of the snow disturbance, the daily municipal services were provided as comprehensive as during the normal circumstances. The municipalities had a minor training, which was particularly focused on the general disturbances. However, the contingency plans formed the basis for the responsive actions.

**The Social and Health Care of Kainuu** provided the legal services for the inhabitants and maintained the situational awareness. It was a member of the regional crisis group led by the Rescue Department. It had a higher operation frequency than usually. The Social and Health Care had comprehensive plans and it was systematically trained with the other co-partners within the regional crisis group, e.g. local defence exercise 'Kajaani17'. The Social and Health Care produced temporal evasive accommodation for the inhabitants, and the home care units visited

and helped their clients. Additionally, the home care units visited the homes of all those inhabitants who needed help in co-operation with the Red Cross, and the common information was shared to evade visiting the same house twice (Ahonen, 2018).

**The Private Health Care Company Attendo** conducted the daily social and health care services in the Puolanka municipality. It also participated for monitoring of inhabitants who needed help at their homes. The home care units searched, visited and helped their clients who needed help during the snow disturbance event. Attendo trained with the Puolanka municipality in the pre-phase of the disturbance (Rautiainen, 2018).

**The local energy company Loiste** coordinated the reparations of the power outages. The reparations were provided by the conductors and Loiste's own personnel. Loiste organised meetings by its facilities and produced weather forecasts and other essential information for the regional crisis group members. The contribution of the Loiste was essential for maintaining the situational awareness to the regional crisis group particularly about the areas under the power outages. For this purpose, a frequently updated online power outage map about the most long-lasting power outage areas including the number of the inhabitants in these areas was informative for both the regional crisis group and the inhabitants. This information could be utilised by the co-partners, who could prioritise the areas with the highest need of help and deliver help directly to them (Reinikka, 2018).

**The contractors** repaired and maintained the powerlines, removed snow from them, and chopped down the damaged trees near of the powerlines. These actions were coordinated by the local energy company Loiste. Altogether there were approximately 200 repairers, when the disaster was in the most challenging phase. They utilised lumberjack vehicles, diggers and snowmobiles during their reparation processes. Altogether three helicopters participated and played an essential role in the search for the damaged powerlines. Additionally, one helicopter able to remove trees near the powerlines operated in the snow disturbance areas (Reinikka, 2018).

**Kainuu Brigade** is a unit of the Finnish Defence Forces. It participated in the planning meetings and the systematic training in the pre-phase. It also participated in the post-analysis meetings. The Brigade contributed to the urgent rescue operation and assisted the Rescue Department of Kainuu with 10 all-terrain vehicles including their professional crew, and the all-terrain vehicles were reinforced by maintenance vehicles. The all-terrain vehicles were utilised in the transportation of the repairers to the broken powerlines through the challenging snowy terrain. The Brigade also provided aggregates to the telecommunication towers (Picture 3). In addition to the material and expert supply, the municipalities felt the Brigade's participation as an essential moral encouragement to them (Oinonen, 2018).



**The Finnish Border Guard** visited and supported the inhabitants living at their homes near the border area. The application process for the official mandate to act lasted too long, so the Finnish Border Guard implemented this without a mandate (Väättäinen, 2018).

**The Red Cross** had a contingency plan and it organised exercises in its divisions of the Voluntary Rescue Service Vapepa and the First Aid groups. The local departments of the Red Cross assisted the village associations with their patrolling resources, which visited the local households by door to door-procedure in the areas affected by the most severe disturbances of the water supply and power outages. It supported the inhabitants by the production of water supply, survival items and information concerning the situational awareness. The municipalities were supported by the Red Cross by aggregates, water tanks and information of the situational awareness. Comprehensive planning between the individual Red Cross Departments was practised during the on-site phase. The Red Cross participated in the post-analysis meetings and as a result, its procedures will be improved by the obtained results and experiences (Kemppainen, 2018).

**Numerous organisations of the Third Sector** were represented in the Kainuu snow disturbance event, e.g. the Motor Club of Puolanka played an essential role in the on-site phase providing support locally (Rautiainen, 2018).

**The Village Associations** in Kainuu had a significant impact on their own villages. They coordinated the support between the neighbours and the local inhabitants. The implementation of actions was mainly improvised, because there were no updated contingency plans according to the experts interviewed by the village associations Ruhtinansalmi and Ala-Vuokki (Sahrman-Hauhia, 2018). A village club building maintained by a village association was commonly determined as the management centre of a village, where the villagers could recharge their smartphones and receive water supply and information for situational awareness. The updated information was also received by the village's Facebook page maintained by a village association. The individual village associations supported each other, and they shared the local information for the production of situational awareness with the regional crisis group and the Red Cross (J. Seppänen, 2018).

**Inhabitants** forwarded essential information about the locations of the broken powerlines to the regional crisis group. They also supported each other by providing information for the production of exact situational awareness. According to the expert interviews, the inhabitants had adequate skills and material preparedness for the snow disturbance event. However, the preparedness can be improved further by educating, networking and supporting the inhabitants to have a decent amount of long-lasting food at their homes. According to the interview with the municipality of Hyrynsalmi, the inhabitants are wished to survive 72 hours without external help.

**Companies** were active in the co-operative network by offering e.g. temporary facilities into the use of the inhabitants.

**The local media** announced essential information about the snow disturbance case on daily basis. Their activity strengthened the production of exact situational awareness.

#### 4.2 Pre-Phase

**Planning in pre-phase** was generated as a result to the weather forecasts in the early December 2017. The co-operative network could act proactively and conduct the to this disaster specific preparations before the on-site phase (Heikkinen & Kareinen, 2018).

**Contingency plans** were implemented by most of the interviewed co-partners. The contingency plan was the basis for planning and preparedness of a snow disturbance kind of abnormal circumstances.

**Operational plans** assisted to commit the appropriate actions in the entire disaster management (Ahonen, 2018).

**Internal instructions and emergency practicalities** formed the guidelines for the Kainuu Social and Health Care (Ahonen, 2018).

**Systematic reporting** was used among the interviewed organisations. This helped to form the comprehensive situational awareness by all the participants of the co-operative network (Ahonen, 2018).

**Co-operative initiatives** with the neighbouring municipalities were useful and supportive during the disturbances (Väättäinen, 2018). Common training were provided and material support and information were exchanged. Additionally, the Rescue Department of Kainuu initiated agreements with Rescue Departments next to the Kainuu region. However, the rescue operations in the Kainuu snow disturbance case were mainly accomplished by their own resources (Heikkinen & Kareinen, 2018).

#### 4.3 On-Site Phase

**The formation of the societal resilience by the co-operative network** is emphasised in the figure 4.

**Assessment of the situation** was accomplished during the first part of the on-site phase. This assisted to produce a better understanding of the operational situation resulting in more efficient counter-actions against the disturbance.

The leading responsibility by the Rescue Department of Kainuu was found essential in all phases. The Rescue Department received this task on the 4<sup>th</sup> of January 2018. Before this period, the Rescue Department coordinated the management of the snow disturbance. The centralised responsibility to lead improved the production of situational awareness by the other co-partners and strengthened the overall coordination of the responsive actions during the disturbance. Additionally, there was the possibility to receive help for the urgent rescue operation from the Finnish Defence Forces, which practically provided the tracked all-terrain vehicles manned by their trained crew (Heikkinen & Kareinen, 2018).



**Figure 4.** The formation of societal resilience by the co-operative network in the Kainuu snow disturbance case 2018.

**Situational awareness** was maintained by the systematic and multifaceted exchange of information between the co-partners. The co-partners received the essential information by the other co-partners and the local inhabitants (Figure 4).

**The differentiated raise of the preparedness level -parameter** was utilised by the Rescue Department of Kainuu. The preparedness level was raised as a consequence to the current

situation, e.g. the local fire stations were occupied in the beginning of the disaster (Kareinen, 2018).

**Logbook** was updated by the Social and Health Care of Kainuu concerning all the implemented actions on a daily manner. This clarified the situational awareness and stored the already implemented actions for a later evaluation (Ahonen, 2018).

**Participation in urgent rescue operation** was conducted by the Finnish Defence Forces. Related to this, the local Kainuu Brigade assisted the contractors mandated by the energy company Loiste. Kainuu Brigade supported the contractors with ten NA-110 all-terrain transport vehicles and their trained crew. The brigade supported their transport vehicles also by a fuel vehicle and a maintenance vehicle. Additionally, the crew was circulated with extra crew members to give rest to the crew. The main task was to transport the repairers and lumberjacks authorised by the local energy company Loiste to the broken powerlines through the challenging snowy terrain (figure 5).



**Figure 5.** The widely utilised NA-110 all-terrain vehicle in action. Note the extreme snow conditions. Photo: Kainuu Brigade.

**Regional crisis group** gathered in the Rescue Department of Kajaani during the snow disturbance case. Depending on the situation, the co-operative network gathered there physically once or twice per a day, and there was also an online participation possibility. The group consisted of the following organisations: The Rescue Department of Kainuu, The Energy Company Loiste, Siirtoverkko Kisanet, the Kainuu Social and Health Care, the Social work of Kainuu, The Environmental Office of Kainuu, Kainuu emergency medical service, the Police Department of Oulu and the Kainuu municipalities.

The group was presented with fewer organisations in the beginning of the disaster, but the amount of participating organisations was increased during the disturbance. The decisions were reported to the other co-partners on daily manner. The communication outside of the meetings was conducted by emails. This group was seen particularly beneficial in regard to the overall coordination of actions and production the situational awareness (Heikkinen & Kareinen, 2018).

**The resources of Rescue Department of Kainuu** were highly occupied by the snow disturbance case as a result of the Rescue Department's responsibility to lead and the increased frequency of rescue operations (Heikkinen & Kareinen, 2018). Especially, the headquarters of the Rescue Department were the centres of situational awareness and responsive actions and were therefore highly strained. Also, the Kainuu Social and Health Care had more issues to accomplish compared to normal circumstances in Kainuu (Ahonen, 2018).

**The power outage map** was frequently updated by the energy company Loiste. The map played a decisive role for the formation of the situational awareness and for the maintaining of it. The map indicated the location and the estimated duration of the power outage areas and presented the number of the inhabitants without power. The regional crisis group could then set their priorities for the operative implementation (Reinikka, 2018).

**Occupational safety** was conducted with high success. According to the expert interviews, none of the interviewed co-partners' employees got injured in the entire Kainuu snow disturbance case. There was only one severe accident in the municipality of Ristijärvi during the snow disturbance case. One man was injured by the falling powerlines and trees while he was observing the repairing process (Heikkinen & Kareinen, 2018).

**The municipal crisis management teams** were active in all interviewed municipalities. The crisis management team was divided into headquarters and an operative group in the municipality of Suomussalmi (Väättäinen, Rautiainen. 2018).

**Support between the neighbours** was found essential for dealing with the disturbances brought by the power outage. Approximately 50% of the population of Kainuu described that they received help from neighbours during the snow disturbance case. There were a great variety of help: e.g. lending of tools or other items, keeping company and sharing the current situational information (Laurikainen, 2018).

**Interaction with the local people** produced plenty of detailed information to the co-operative network. The information concerned e.g. the locations of the broken powerlines and the houses where the people lived. The local people gave also constructive feedback for the co-operative network (Heikkinen & Kareinen, 2018).

**Supplementary electricity source** played a key role in the environments, where the power outages were prolonged. In the Kainuu snow disturbance case these environments were mainly the villages locating far away from the city centres. The available aggregates in the local shops were sold out during the first days of the snow disturbance case.

**Supply of the drink water and electricity** for electronical devices were essential for the inhabitants affected by the power outages. A local fire department played an essential role in this context, as well as the village club buildings and the swimming halls in the cities (Väätäinen, 2018).

**The crisis management implementation within the municipalities** was conducted by the municipalities themselves, and it was supported and coordinated by the Rescue Department of Kainuu. The municipalities found this procedure motivating.

**The telecommunication between all actors** had varying success during the snow disturbance case. Specifically, the villages which were not near to the city centres, had severe problems with the telecommunication.

**The emergency population warning** was announced by the Rescue Department of Kainuu for the following reason: the emergency calls did not function in the proper way, and at that time, there was no information, for how long this situation may last (Heikkinen & Kareinen, 2018). The emergency population warning was found encouraging by the Kainuu inhabitants, because they found that the disturbance was seen seriously both at the regional and national level.

**The main responsibility of village associations** was to deliver the situational information to the Rescue Department and its co-partners and to provide support between the neighbours in regions of their villages. Furthermore, vital information about the broken powerlines was received from the village associations.

**Centralised announcements by communication professionals** were utilised during the snow disturbance case. Coherent and concordant messages were announced to the Kainuu inhabitants, which improved situational awareness. This arrangement was found logical by the all interviewed organisations (Ahonen, 2018).

**An updated informing of the local people** was important during the snow disturbance and it was conducted by a multi-channel and multifaceted way by the participated organisations. The regional crisis group informed locally by the local newspapers, TV-news and the webpages of the co-partners. The essential information was also produced in English and other languages due to the need for informing the tourism centres in Kainuu. (Ahonen, 2018). On the other hand, the municipalities utilised phoning, WhatsApp, emailing and face-to-face contacts for communication. One of the most essential improvements concerning appropriate informing was

the centralised and systematic procedure for producing announcements when the Rescue Department of Kainuu took over the responsibility to lead (Rautiainen, 2018).

**Utilising the social media** is one of the most functional ways to inform the local people. Social media should be utilised in all phases in a snow disturbance case. Information produced by Facebook, Twitter and WhatsApp groups has potential to reach a high number of people. On the other hand, the communication during the snow disturbance was multilateral when the local people produced information concerning the effects of snow disturbance to the network. In this context, the social media was useful for constructing the network within the village and enhancing the network structure by updated and supportive exchange of information. However, the seniors may do not know how to use and utilise the social media and they need to be supported within this context in future. Some interviewed municipalities utilised WhatsApp for their inner communications meaning that these participants were not obligated to be present in their command centre 24/7 for the updated exchange of information. (Väättäinen, 2018)

**Utilising the third sector** within the snow disturbance region was found beneficial. The Finnish Red Cross and the local division of Suomussalmi assisted the municipality of Suomussalmi so that the inhabitants needing support could be identified and support to them could be provided. These objectives belonged initially to the village associations (Väättäinen, 2018).

**In general, the co-operation** functioned well and proficiently. The organisations within the Kainuu region form a comprehensive network, which is characterised by the good local level knowledge and expertise. When local inhabitants and organisations know each other well, the moral is kept at high level as shown in the Kainuu snow disturbance case (Rautiainen, 2018).

#### 4.4 Post-Phase

**Post-analysis meetings** were an essential part for learning from the past. They were conducted with all the participated co-partners and organised by the Rescue Department of Kainuu, which had the responsibility to lead. These meetings brought plenty of developmental ideas, which help to improve the preparedness and responsive actions prior the next possible disturbance.

**Material support by aggregates** were a necessity during the long-lasting actions on the on-site phase. Although there were aggregates in Kainuu during the snow disturbance case, there were still too few of them for the needs of entire population. Therefore, it is essential to have enough aggregates for the potential need of large segment of population affected by the large-scale power outages.

#### 4.5 Visit in the Destruction Area on the 27<sup>th</sup> April 2018

The visit in the Kainuu region was organised on 27<sup>th</sup> April 2018. The objective of the visit was to observe at the local level the degree and content of the destruction caused by wet snow during January 2018 (Figure 6). The visit was organised by the Rescue Department of Kainuu. Risk Manager Janne Heikkinen guided the tour through the most damaged areas in Hyrynsalmi and Suomussalmi, which could be recognised by the roads. Furthermore, Janne Heikkinen was interviewed during the visit for the second time. The damage area is illustrated in the figure.



**Figure 6.** A photo exemplifying the damages in the snow disturbance area of Kainuu during the study visit on the 27<sup>th</sup> of April 2018. Photo: Lauri Vainikka.



## 5 Conclusions

### 5.1 On Pre-Phase

**The systematic and comprehensive planning** generally improves the capability of organisations to be better prepared for the disturbances e.g. caused by wet snow. The completed plans can be tested proactively e.g. by a fictional, yet realistic case, which will test comprehensively the specific sections of the plan. The observed weaknesses can then be improved and the coherence of the plan enhanced. It is beneficial to conduct systematic training with the co-partners, and thus improve the co-operative network during the pre-phase (Väättäinen, 2018).

**A comprehensive contingency plan** clarifies the responsibilities, improves the situational awareness and produces guidelines for responsive actions. There were missing contact informations concerning the civil phone numbers in contingency plans of both municipalities and village associations. In order to prevent the information gaps, the contingency plans must be frequently updated (Rautiainen, 2018).

**A contact list of the third sector organisations** will help to organise the support produced by voluntary-based organisations in the beginning of the disaster. When the list is systematically updated, there is no need for the search of contact information. This results in a more efficient management of the responsive actions (Rautiainen, 2018).

**A list of the critical objects** is useful for the efficient production of support to the inhabitants characterised by the most critical need of help during the on-site phase. There was a lack of such a critical information during the snow disturbance case in Kainuu, and it took a plenty of time to produce this information during the disturbance. Therefore, the best way is to produce these lists prior to disturbances and thus maximise their potential during disturbances (Väättäinen, 2018).

**A risk analysis of the vulnerable targets** is used for the assessment of the level of needed support for the individual inhabitants. The specific risk profiles of each area within a village or city enhance the situational awareness and improve production of the responsive actions by the co-operative network. (Rautiainen, 2018)

**The telecommunication towers equipped with supplementary power source** will reduce the negative effects caused by the power outages. As a result, the teleoperators have potentially more valuable time for their responsive actions. The roles and responsibilities between the specific teleoperators should be identified systematically during the normal circumstances.

In future, ambulances are planned to be provided by the **supplementary energy sources**, which can be delivered to households if needed. Supplementary energy sources can e.g. provide sup-

plementary light and recharge the mobile phones. The households using inhaler and other critical energy-dependent devices, are planned to be provided by an extra battery as an additional energy source for a few hours.

**The crisis management teams in the municipalities** should include an adequate number of members, which are specifically trained for the management of crisis, so that the production of response to crisis will be dynamic and confident. (Väättäinen, Rautiainen. 2018)

**Relocating the powerlines** beside the roads and highways will ease the repairing and maintaining processes during a snow disturbance case. Additionally, there are no hazardous trees on the road's side of the powerlines, which will decrease the likelihood of a falling tree by 50%. Even though this is an expensive investment, it will strengthen the societal resilience in the long run. The empty space between the powerlines and trees must be wide enough, so that collapsing trees cannot reach the powerlines and cause a disaster this wide (Rautiainen, 2018).

## 5.2 On On-Site Phase

**Responsibility to lead** is also taken over by the Rescue Department in the future if needed. The Rescue Department perceives comprehensively the overall situations of the possible coming disasters and is capable to take over the responsibility to lead without any delay.

**Situational awareness** and its maintaining were one of the most essential interests of the cooperative network. Exact and real-time information concerning the disturbance are needed by all the network partners. This information is used for the proper production of responses to the disturbance. In the network, the exchanged information reduces over-lapping tasks, which enhances the situational awareness. The exchange of the information should be continuous, systematic, high-detailed and real-time. Necessary amount of information should also flow between all co-partners, e.g. between the contractors and the village associations (Figure 3).

During the snow caused disturbance, there was no **contact person** from the Kainuu Brigade and energy company Loiste in some occasions during the on-site phase. These organisations are planning to develop their processes by having their own contact persons during the potential disasters in future. In general, the contact person strengthens the situational awareness of the contact person's organisation. Insufficient situational awareness would complicate and reduce the overall disaster management, which will then suffer from over-lapped tasking, unnecessary manoeuvres and general uncertainty.

According to all the interviewed experts, the appropriate civil skills are essentially important because they support the management of disturbance and for these reasons they should be trained further in the future. Despite the adequate level of preparedness, e.g. existence of aggregates and extra lighting supplementary (Ahonen, 2018), alternative water sources of the

local inhabitants were wished during the disaster by the operated organisations (Väätäinen, 2018).

**The role of the village associations** was essential in the local implementation of crisis management. Training of the village associations is considered as an essential step for the improved preparedness for potential disturbances after the Kainuu snow disturbance case. By systematic training, the local village associations can act even more efficiently.

**The emergency population warning** according to the Rescue Department needs to be developed so, that it can be allocated within SMS messaging into one specified area (Heikkinen & Kareinen, 2018).

**Announcements concerning the snow disturbance case** are planned to be coherent from the very beginning of the disaster. The frames of the various crisis announcements to the inhabitants and to the local and national media can be prepared in advance. This preparation accelerates the crisis communication and therefore enhances the production and maintenance of comprehensive situational awareness (Heikkinen & Kareinen, 2018).

**Supplementary telecommunication network** is planned to be organised in the Kainuu region in the future. This solution would reinforce the crisis communication in a situation where the GSM telecommunication would be out of action.

**The local congregations, the Martha Organisation and other organisations** have a great potential to provide support during disturbances, but they were not utilised in their full potential in Kainuu snow disturbance case. E.g. 'kotivara' model of Martha Organisation offers a remarkable potential for preparedness of households during disturbances, in which the regular supply of water and groceries is disturbed, and the households should be able to manage independently for a limited time (Väätäinen, 2018).

**Exact and real-time informing of the local people** is essential for the production of correct situational awareness and for the prevention of disinformation. The informing of the inhabitants should be systematic and regular. The inhabitants think that their regular informing is important, although there would have not been any remarkable changes between the previous and the current announcement. According to the expert interview by SPEK, 76% of the Kainuu people felt, that they had received enough information about the disaster (Laurikainen, 2018). The announcements must be short and easy to understand. The informing should be conducted in multi-way channels to reach all inhabitants. Local newspapers, flyers, radio broadcasts, city's own website and the social media are all useful for informing the local people. The co-operative network must be prepared for providing information also in English, because there may be also foreign visitors in the disturbance region. (Rautiainen, 2018)

**The contractors' basic needs** should be secured. Pragmatically, this means that the food, water and fuel supply must be developed so, that the reparations at the powerlines continue without interruptions and the contractors have adequate working conditions. (Ahonen, 2018).

**Re-equipping the ambulances** by extra aggregates and lighting, which provide power for the electronical devices, was found necessary during the Kainuu snow disturbance case. This equipment can be left to the households, which are in most need of them. Additionally, the households, which are using the electricity powered ventilators, should have their own aggregates (Ahonen, 2018).

**General information map about the broken powerlines** in the internet used by the inhabitants would clarify the situational awareness. However, this map did not exist during the Kainuu snow disturbance case and it was seen useful by the Rescue Department of Kainuu. If the map would exist, the inhabitants could have an easy access into uploading pictures, location and other essential details about the broken powerlines. This would help the regional crisis group to coordinate the overall situation (Heikkinen & Kareinen, 2018).

**The legitimate actions** were occasionally slow and uneven during the Kainuu snow disturbance case. Firstly, it was not possible to provide support by the Defence Force to the disturbance area until the Rescue Department of Kainuu took over the responsibility to lead 4 January 2018. Secondly, the Finnish Border Guard had to support the inhabitants in the border area, even though it was not mandated to implement this support officially. The bureaucracy should be logic and efficient, so that the support can be offered to the disturbance area without delays.

**The critical infrastructure** was generally well-equipped with the supplementary energy sources. However, there was occasionally shortage of the aggregates. The critical facilities, e.g. the headquarters of the organisations, should be equipped with an aggregate or with another energy source. Other critical facilities, e.g. senior homes, should be considered either to have a supplementary energy source, or a systematic evacuation plan into the secondary facilities during the power outage.

**The telecommunication between all actors** had varying success during the Kainuu snow disturbance case. Specifically, some villages which were not near to the city centres, had severe problems with the telecommunication for several days. In any case the communication should function efficiently, and it should be provided in real-time. The alternative telecommunication networks e.g. VIRVE should be taken into consideration. The operations with the VIRVE devices should be efficient and their use should be trained comprehensively during normal conditions. The systematic training improves the internal and external communication between the actors during disturbances.

**The social media** was seen as an important informative channel during the Kainuu snow disturbance case by the co-operative network. It was utilised widely by the inhabitants and the co-partners of the co-operative network could reach the local inhabitants comprehensively. The most essential channels of the social media were Twitter, WhatsApp and Facebook during the Kainuu snow disturbance case.

**The co-operative network** was seen essential by all co-partners of the network. Specifically, the Rescue Department evaluated the co-operative network as a key factor in the terms of responsibility to lead during the disturbance conditions. As a result of network-based co-operation, the situational awareness is significantly more comprehensive and deeper compared to the situational awareness produced by each actor individually. Therefore, the co-operative network is one of the most essential models to prepare and improve the efficiency of responses for the potential disasters like the Kainuu snow disturbance case. The network combines specific competences and expertise of the individual organisations and actors. The co-operative network therefore strengthens significantly the societal resilience during the disaster conditions and as a result, the recovery of the society is accelerated after the disaster conditions.

### 5.3 On Post-Phase

The Kainuu snow disturbance case in Kainuu in January 2018 was a large-scale, multifaceted, long-lasting and challenging natural disaster. Because of that, it was also unique in the Finnish disaster history.

Because the powerlines of the local electricity provider got the most damages regarding to the overall cost of the disaster, they are still vulnerable in the future for the disasters this kind. The estimated total cost for the electricity provider Loiste was approximately 10 million euros on the day of the expert interview 27 March (Reinikka, 2018).

The Kainuu forest owners' trees were also severely damaged. These kinds of damages are very challenging to evade in the future.

Despite the challenges, the co-operative network was found to be essential for the management of the snow caused disturbance. By the network-based co-operation, the exchange of information was enhanced, and the production of situational awareness was improved. Consequently, the coordination of responsive actions and the general management of disturbance were more comprehensive.

#### 5.4 The Reliability of the Research and Further Research

The research for this thesis was mainly conducted through expert interviews, which were organised through Skype and GSM calling. Mishearing was one of most evident risk for the data. It can be admitted, that the content analysis is one of the critical points regarding to the reliability (Remler & Van Ryzin, p.124). However, this risk was reduced by letting the interviewees to evaluate and correct their specific interview memo. Secondly, the title of this thesis was challenging to limit because of its nature; the co-operative network in the Kainuu snow disturbance case was wider than it was expected in the beginning of the thesis process. Indeed, the limitation narrowed the theme and e.g. the helicopter companies and the municipality of Kuhmo, had to leave out from the scope. The limited research time was the reason for this narrowing.

Despite the challenges in the beginning, the research received its fine structure during March 2018. The research covered most of the co-operative network, but it also let plenty of issues for further research. E.g. the contractors were not included in the interviews, and because of this, the contractors' perspective could be interviewed, researched and developed further. The co-partners' roles within the co-operative network could be researched separately deeper. Even a single action provided by a specific co-partner, e.g. the management of a specific organisation, and its role and contribution in the overall management of the snow caused disturbance could be one relevant point for the future research.

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## Appendix 1: Expert Interview List

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**Interview 2.** Expert interview. 13 March 2018. The Finnish National Rescue Association SPEK.  
Researcher Heikki Laurikainen.

**Interview 3.** Expert interview. 19 March 2018. Kainuu Brigade, the Finnish Defence Forces.  
CEO of Rescue Services Kimmo Oinonen.

**Interview 4.** Expert interview. 27 March 2018. The Energy Company Loiste.  
Production Manager Ismo Reinikka.

**Interview 5.** Expert interview. 6 April 2018. The Municipality of Puolanka.  
Mayor Esko Rautiainen.

**Interview 6.** Expert interview. 18 April 2018. The Social and Health Care of Kainuu.  
Administrative Chief Physician Esa Ahonen.

**Interview 7.** Expert interview. 19 April 2018. The Municipality of Suomussalmi.  
Acting Mayor Eija Väättäin.

**Interview 8.** Expert interview. 20 April 2018. The Municipality of Ristijärvi.  
Mayor Petteri Seppänen.

**Interview 9.** Expert interview. 23 April 2018. The Municipality of Hyrnsalmi.  
Mayor Heimo Keränen.

**Interview 10.** Expert interview. 24 April 2018. The Red Cross of Suomussalmi.  
Chairman Hilka Kemppainen, Second Chairman Raija Heikkinen.

**Interview 11.** Expert interview. 25 April 2018. The Village Association of Ruhtinansalmi.  
Chairman Jonna Seppänen.

**Interview 12.** Expert interview. 3 May 2018. The Village Association of Ala-Vuokki.  
Chairman Kirsi Sahrman-Hauhia.

## Appendix 2: Interview Questionnaire

The following questionnaire was presented equivalently to all interviewed experts. The questions were divided into four main sections: preparation, operative activity, describing the co-partners and their roles and their final post-analysis. The translated version in English is attached below the original version in Finnish.

### **Lauri Vainikan opinnäytetyö "Monitoimijaverkosto Kainuun Tykkylumi-tapauksessa tammikuussa 2018" - Haastattelukysymykset**

#### **1. Tykkylumen aiheuttaman häiriötilanteen yleiskuva. Toimijoiden varautuminen vastaaventyypiseen häiriötilanteeseen:**

- 1.1. Mikä oli omalta kohdaltanne häiriötilanteen kesto, syntyneet vaikutukset (henkilövahingot, aineelliset vahingot) ja vaikutusalueen laajuus?
- 1.2. Oliko tilanne vaativa ja mistä syistä verrattuna muihin häiriötilanteisiin?
- 1.3. Kuinka hyvin toimija on varautunut tämän tyyppiseen häiriötilanteeseen:
  - ✓ miten oli suunniteltu
  - ✓ ohjeistettu
  - ✓ harjoiteltu omassa organisaatiossa ja yhdessä muiden toimijoiden kanssa
  - ✓ ketkä olivat keskeisimpiä yhteistyötahoja, joiden kanssa oli yhdessä suunniteltu ja harjoiteltu?

#### **2. Organisaation oma toiminta häiriötilanteen aikana.**

- 2.4. Miten hyvin operatiivinen toiminta sujui häiriötilanteen vakauttamiseksi?
- 2.5. Olivatko operatiivisen tilanteen aikaiset ohjeet ja vastuiden jako tarvetta vastaavat?
- 2.6. Toimivatko matkapuhelin- ja Virve-verkot? Jos eivät, niin kuinka pitkään oltiin ilman niitä parhaimmillaan?
- 2.7. Miten viestintä hoidettiin operatiivisen vasteen tuottamisen aikana kohdeväestöön ja yhteistoimintaosapuoliin, kuten järjestöihin? Saatiinko asukkailta ja yhteistoimintaosapuolilta tilannekuvan muodostamista tukevaa tietoa? Miten tilannekuvan muodostamista tulisi kehittää yhteistyössä entistä paremmaksi? Havaittiinko häiriötilanneaikaisen viestinnän osalta kehittämistarpeita?

2.8. Organisaation oma varautuminen: Miten varautuminen oli organisoitu ja kuinka sitä oli harjoiteltu etukäteen organisaation sisällä ja yhdessä muiden toimijoiden (kenen) kanssa? Sujuiko tilanteen hoito kuinka hyvin suhteessa varautumiseen ja arvioitiinko varautumisen osuvuutta tilanteen hoitoon tilanteen päätyttyä? Olivatko kriittiset toimitilat varustettu varavoimalla?

**3. Tykkylumen aiheuttaman häiriötilanteen purkamiseen osallistuneiden yhteistoimijoidenluonnehdinta: Mitä eri toimijoita ja millä roolilla toimijoita osallistui tilanteen saattamiseksi normaalitilaan? Merkitse alla olevan listauksen mukaisen toimijan yhteyteen, oliko toimijan rooli merkittävä S = häiriötilannetta edeltävässä Suunnittelu- ja harjoitteluvaiheessa, O = Operatiivisessa vastevaiheessa ja/tai J = Jälkihoitovaiheessa.**

3.9. Mitä keskeistä osaamista ja vahvuuksia toimijat toivat mukanaan, joka oli merkittävässä asemassa häiriötilanteen korjaamiseksi? Erotellaan materiaaliapu ja asiantuntijaosaaminen, esim. Puolustusvoimat: Millaista virka-apua saatiin: materiaaalitelavaunut, varavoimakoneet, mitä muuta apua?

Kunnat: Hyrynsalmi, Puolanka, Ristijärvi, Suomussalmi

Kuntien kyläyhdistykset

Kainuun Pelastuslaitos

Sähköverkkoyhtiö Loiste

Sote eli sosiaali- ja terveystieteiden keskus

Attendo Terveyspalvelut Oy (Puolangan alue)

Järjestöt: SPR, muut: mitkä?

Kiireellistä pelastusapua antaneet Puolustusvoimat ja Rajavartiolaitos

Muut toimijat:

#### **4. Jälkihoito: Mitä tilanteesta opittiin?**

4.10. Mikä toimi omassa organisaatiossa suunnitellusti ja kuinka häiriötilanteeseen vastaamisen toimintaa tullaan toisaalta kehittämään jatkossa?

4.11. Mikä toimi yhteistoimintaosapuolten kanssa hyvin ja mitä jäi kehitettävää, jotta häiriötilanteen vakauttaminen sujuisi entistä paremmin?

4.12. Miten asukkaita voidaan osallistaa entistä paremmin huolehtimaan omasta varautumisestaan vastaavien tilanteiden varalle tulevaisuudessa?

**The translated English version is attached below.**

Lauri Vainikka's thesis 'Co-Operative Network from the Rescue Board Perspective in Kainuu Snow Disturbance Case, January 2018' - the interview questions

**1. The situational awareness caused by the snow disturbance case. The preparedness of the co-partner regarding to a disaster this kind.**

1.1. How long was the duration from your organisation's perspective? Did the disaster cause human casualties and/or material losses to your organisation? How wide was the disaster?

1.2. Was the situation demanding and why in comparison with the previous disturbances?

1.3. How comprehensively was your organisation prepared for this kind of disturbance:

- ✓ How was it planned?
- ✓ How was it structured?
- ✓ How was it trained within your organisation and together with your co-partners?
- ✓ Who were the main organisations regarding to the co-operation, with whom the preparedness was planned and trained?

**2. Operative activity of your organisation.**

2.4 How comprehensively did the operative activity function in regard to stabilising the situation?

2.5. Were the instructions and responsibilities clear during the disaster?

2.6. Did the GSM and Virve telecommunication networks function as they should? If not, for how long did they not function?

2.7. How was the informing the inhabitants and the co-operative network managed during your operational activity? Did your organisation receive information from the inhabitants and/or from the co-operative network, which supported the situational awareness? How should the maintaining of the situational awareness in co-operation improved further? Did you notice any weaknesses in the communication during the disaster, which should be developed further?

2.8. The preparedness of your organisation. How did your organisation organise the preparedness and how was it trained within the organisation and in co-operation with the co-partners? Who were in your case these co-partners? Did your operative activity function

well regarding to your preparedness level and was the functionality of your preparedness analysed after the disaster? Were the key premises of your organisation equipped with supplementary power sources?

**3. Describing the co-partners in Kainuu snow disturbance case: Who were your co-partners and what were their roles in the disaster management? Please mark under each co-partner, was the corresponding role remarkable in P = the planning and training phase, O = the operative phase and/or PP = the post-analysis phase.**

3.9. Which essential expertise and/or material support did the co-partners produce into the disaster management? Please classify the expertise and the material support, e.g. Kainuu Brigade → What type of support was received → All-terrain vehicles, aggregates, other type of support?

Municipalities: Hyrynsalmi, Puolanka, Ristijärvi, Suomussalmi

The village associations:

The Rescue Department of Kainuu:

The local energy company Loiste:

The Social and Health Care of Kainuu:

The private social and health care company Attendo (in Puolanka):

NGOs: The Red Cross, others?

The Finnish Defence Forces:

The Finnish Border Guard:

The contractors (e.g. repairers) coordinated by Loiste:

**4. The post-analysis: What was learnt from the snow-caused disturbance?**

4.10. What did function in your organisation as planned and how is your organisation's disaster management going to be developed further?

4.11. What did function well with the co-partners and was there something, which could be developed to improve the disaster management further?

4.12. How can the inhabitants be more engaged into their own preparedness regarding to the possible disturbances in the future?



## Appendix 3: Research License



ETELÄ-KARJALAN  
PELASTUSLAITOS

1 (3)

Tutkimuslupahakemus

831

Hakijan tiedot	Nimi Lauri Taavetti Vainikka ( )
	Oppilaitos ja sen osoite Laurea-ammattikorkeakoulu Vanha Maantie 9 02650 ESPOO
	Tutkintonimike Degree Programme in Security Management (BBA)
	Sähköpostiosoite: 
	Puhelinnumero 
Tutkimuksen yhteyshenkilö / ohjaaja Etelä-Karjalan pelastuslaitoksella	Nimi ja virkanimike Heidi Huuskonen, Tutkija
	Sähköpostiosoite 
	Puhelinnumero 
Tutkimuksen ohjaaja oppilaitoksessa	Nimi ja virkanimike Kaci Bourdache, Lehtori
	Sähköpostiosoite 
	Puhelinnumero 
Tutkimus	Tutkimuksen taso: AMK-opinnäytetyö
	Tutkimuksen tieteenala / koulutusohjelma Riskienhallinta, turvallisuusala

2 (3)

	<p>Tutkimussuunnitelman hyväksymispäivämäärä oppilaitoksessa</p> <p>Lyhyt yhteenveto tutkimussuunnitelmasta (max 450 merkkiä)</p> <p>Opinnäytetyön tarkoitus on selvittää Kainuun 2018 Tykkylumi-tapauksen monitoimijaverkosto, mikä siinä toimi ja mitä tulee edelleen kehittää. Opinnäytetyö toteutetaan kevään 2018 aikana. Opinnäytetyö toteutetaan laadullisena tutkimuksena. Tutkimusaineisto painottuu asiantuntijahaastatteluihin, jotka toteutetaan maaliskuussa 2018. Haastattelut ovat semi-strukturoituja: haastattelukysymykset ovat kaikille haastateltaville samat, ja niihin annetaan vapaamuotoinen vastaus. Haastattelu täyttää siis semi-strukturoidun metodin piirteet.</p>
Rahoitus	Kuvaus tutkimuksen rahoittajasta
Sitoumus	<p>Sitoudun siihen, että käyttämäni tiedot ovat salassapitovelvollisuuden alaisia, enkä käytä, enkä luovuta niitä muuhun tarkoitukseen kuin mihin tutkimuslupa on myönnetty.</p> <p>Noudatan henkilötietolaissa ja muualla lainsäädännössä mainittuja säännöksiä henkilötietojen käsittelystä, salassapidosta ja hävittämisestä.</p> <p>Lähetän valmiin opinnäytetyön sähköisenä tutkimuksen ohjaajalle Etelä-Karjalan pelastuslaitoksella.</p> <p>8. helmikuuta 2018, Lappeenrannassa</p> <p></p> <p>Hakijan / hakijoiden allekirjoitus ja nimenselvennys:</p>

3 (3)

Liitteet	Tutkimussuunnitelma
Allekirjoitukset	Päiväys
	Hakijan allekirjoitus ja nimenselvennys
	 Lauri Vainikka
	Päiväys 15.2.2018
	Ohjaavan opettajan allekirjoitus ja nimenselvennys
	 Kaci Bourdache
Päätös	Myönnän tutkimusluvan / <del>En myönnä tutkimuslupaa</del> (tarpeeton vaihtoehto ylliviivataan)
	Lappeenranta 15.2.2018
	Päiväys
	
	Allekirjoitus ja nimenselvennys HEIDI HUUSKONEN
	Perustelu, mikäli päätös on kielteinen: